INFANTILE MORTALITY.

DEAR MR. VICE-CHANCELLOR,

Public attention has been frequently called of late to the terribly high infantile mortality in many of our large towns and Urban Districts.

Last year the President of the British Medical Association at Swansea, after speaking of the progress in surgery medicine and public health during the last thirty-six years, said :—

"The annual death-rate of all ages in England and Wales has fallen from 22 to 16 per 1000—a gain of 26 per cent. ; but the death-rate of infants under one year of age has risen nearly 2 per cent., while the birth-rate has diminished. Nearly half the children born were dead within five years."

He added that :—

"Increased infant mortality and diminished birth-rate were two ugly facts not to the credit of our country or of modern civilization. Increased mortality among infants was due to diarrhœa and enteritis, and the increase due to these causes was seven times greater in towns than in the country."

He also stated that much of the mortality is due to the ignorance and carelessness of mothers. It is abundantly proved that much of the evil arises from improper food and methods of feeding the infants, and that, to a very large extent, it is preventible, and ought to be prevented.

The Reports of the Medical Officers of Health of many towns contain similar complaints. For example I may cite that of the Medical Officer of Paddington :—†

"Napoleon said that wars were decided by big battalions. In the same way the race for supremacy, be it in commerce, territorial expansion, or other form of national progress, depends upon the steady increase in population. If the nation is to maintain its position in international affairs, something must be done to counteract the decreasing rate of growth. There can be no doubt that a 'crusade,' to use a term rather in vogue just now, against the present heavy infantile mortality is the only method which promises to produce good results."

This condition of affairs, if allowed to go on, spells ruin to the nation.

In connection with this high infant mortality we have not even the consolation that there is a survival of the fittest. The Medical Officer of Health for Sheffield says‡ :—

"It is quite wrong to say that the infants who die are in the majority of cases puny and unhealthy, and special stress must be laid on the necessity of making every effort to save their young lives."

This is corroborated by many other authorities.

* Not only has the birth-rate decreased, but it is steadily decreasing, and according to high authority it is decreasing more rapidly in England than in any other European nation. See Note A, page 12.

† Report for 1902, page 32.

‡ Report for 1902, page 18.

Under these circumstance I think the University of Oxford, which has lately adopted Hygiene and Preventive Medicine as subjects for study, would add one more benefit to those it has already conferred on this country by showing how the loss of life may most effectually be reduced. May I suggest the methods of Research and Experiment?

Research, i.e.: To encourage and facilitate inquiry into the causes and remedies; and *Experiment, i.e.*: To assist in reducing and keeping reduced the infant mortality in the poorer Parishes of Oxford.

I.—RESEARCH.

There are, of course, many valuable books on Infant mortality and subjects connected therewith at the Radcliffe Library, and more at the Bodleian; but some of the most important documents are not to be found in either, *viz.*: the printed Reports of the Medical Officers of Health throughout England. From these there is much to be learned as to the statistics and causes of the mortality, and of the efforts made to remedy the evil.

With a view of indicating the lines which research would probably take, I should like to mention the most conspicuous causes of infant mortality.*

(1) Prematurity of birth and congenital defects. (Newsholme, "Vital Statistics," 125.)
(2) Hereditary tendencies. (*Ibid*, 126.)
(3) The inexperience and neglect of mothers. This neglect is largely due to industrial conditions.
(4) "Improper food and methods of feeding are answerable for a large share of infantile mortality." (Newsholme, 128.)
(5) Neglect of parents to call in the doctor sufficiently early in case of illness. (Newsholme.)
(6) Overcrowding and bad sanitation.
(7) Accidental or homicidal violence.† (Newsholme, 128.)

Causes of Infant Mortality.

Although it would be impossible to estimate exactly the precise effect of these or any other causes, it is important at least to know

* The order in which these are mentioned does not indicate their comparative importance.

† Dr. Newsholme says there is no trustworthy statistical evidence of the ill effect on the life prospects of children from life insurance (p. 133). Dr. Ormerod takes the same view. Alcohol is a factor entering into many of the above mentioned causes.

which are the most destructive. It will also be well to conduct our researches more especially into those causes where there is a reasonable probability of comparatively swift removal, or at least alleviation. I shall therefore endeavour only to suggest the consideration of those where an improvement is practicable by administrative means without new legislation.

Without therefore discussing either "Prematurity of births and congenital defects*" or "hereditary tendencies," I will pass on to the "overcrowding."

It has generally been considered that overcrowding is one of the greatest causes of infant mortality, but Dr. Newsholme states that overcrowding *per acre* does not affect infant mortality except—an important exception—so far as it involves overcrowding *per room*.

Now overcrowding *per room* at once indicates great poverty and all the evils connected therewith; so that it is a question how far the overcrowding itself affects the infants and how far the high death rates which come in overcrowded localities occur from other causes which usually arise from poverty in town life. This question is raised in a most startling way by the recent experiments of Dr. Hope, M.O.H. for Liverpool.

"In the course of an inquiry into infantile mortality, 1,082 families in which the death of an infant had occurred, were taken consecutively, and certain particulars concerning them ascertained. The total number of children born in these families had been 4,574, but out of that number 2,229 had died, practically all in infancy, representing 487 deaths out of every 1,000, a waste of life nearly five times as great as the standard alluded to. But the most remarkable series of excessive fatality occurred in twelve families in which the large total of 117 infants had been born, and no less than 98 had perished in infancy. These extreme examples, it must be remembered are occurring in families in which, *so far as municipal sanitation is concerned*, there is very little to choose between them and many of the families who rear all, or nearly all, their children, nor can it be shown or inferred that there was any inherent weakness in the offspring, since those who have survived are of fair physique, not, as a class, suffering under any inherited condition likely to terminate their lives; but it is in the *personal and domestic circumstances* † that the contrasts are most marked."—(City of Liverpool Health Report for 1902.)

The view that improper food and methods of feeding are the great causes of the high death rate of infants in our large towns and many other districts of an urban character, has the support of other authorities. I will quote a portion of an address by Sir James Crichton Browne,

* See page 10, and Note A, page 12.

† The italics are mine.

President of the Sanitary Inspectors Association, at the Annual Meeting of that Association, as given in the *Times* of May 9th, 1904.

"After dwelling at some length upon the importance of maternal nursing, and upon the increased infantile mortality always associated with the abandonment of the natural duty in this respect, Sir James declared it to be in the nature of the substitutes offered for mother's milk that the danger to the infant mainly resides. Of the 150,000 infants who die annually in this country in the first year of life three-fourths have been fed artificially. In France the mortality of suckled children is 8 per cent. and that of hand-fed children is 61 per cent. The true factor is clearly shown by the certified causes of death, which point not so much to any inherent weakness in the child as to slow starvation under improper feeding. Dr. Hope, Medical Officer of Health for Liverpool, as the result of elaborate and minute investigations, declares that sanitary conditions have no marked influence on infant mortality, and that the methods of infant feeding are chiefly responsible for the high rate in which it is maintained."

Dr. Sykes, Medical Officer of St. Pancras, said at the recent International Congress for the Welfare and Protection of Children:—

"The feeding of infants is a specially serious matter in view of the fact that the mortality from summer diarrhœa is mainly among nurselings, and that half of the deaths of children under one year are due to improper feeding. Infants fed solely upon breast milk more or less escape diarrhœa, and infants fed upon starchy food mostly succumb." (*Report*, p. 29.)

Here in Oxford, Mr. Rivers Wilson (who has had immense practical experience as Medical Officer of the Oxford Free Dispensary) in a lecture given at the request of the Christian Social Union (City Branch) on the 31st of March, 1903, laid the blame almost entirely upon improper food, improper and dirty feeding-bottles, and domestic dirt, though in reply to a question he agreed that overcrowded and insanitary homes also had a bad effect. All this indicates that a great improvement may be expected from teaching the parents; and the Reports which I have mentioned are most valuable in showing what is being done in this direction in many towns, *e.g.* by distribution of leaflets to parents by various agencies; instruction to girls in the schools, classes, lectures, &c.; appointment of women sanitary inspectors who give verbal advice to mothers.

Some Municipalities have established milk depôts where specially prepared milk is sold.

There are many other difficulties connected with baby life, especially in the case of the poorer classes, which remain to be solved; and a comparison of the M.O.H. Annual reports and a study of the continental literature on these subjects will, I feel sure, afford most valuable information and facilitate wise municipal action wherever needed.

(5) "Neglect of Parents to call in the doctor sufficiently early in case of illness."

The very able medical officer for Oxford (Dr. Ormerod) says:—

"If your child does not thrive, call in a doctor at once. Slight ailments in a child, if not taken in time, often lead on to serious illness or death." (See the leaflet on Feeding and Care of Infants which is intended for distribution in Oxford and obtainable at the Town Hall.)

Now there are a large number of the poor who cannot afford a doctor, nor even to pay into a Provident Dispensary, and others who could afford but are not thrifty. In either case the children suffer, some are weakly all their lives and many die.

Dr. Harris (Islington), commenting on the mortality following on measles—a disease which is the primary cause of a large number of deaths among young children—says that, unfortunately, in many cases no medical advice is called in until pneumonia has supervened. I add an extract from the *Lancet*:—

"Epidemics of Measles and Whooping Cough occurred in the Taunton Urban District during 1903, and Dr. H. J. Alford deplores the small amount of attention which is paid to these two diseases by parents as compared with any illness having the affix 'fever.' Possibly it might really be worth while, in order to impress the serious nature of measles upon the people, to apply the term 'spotted fever' to it." (*Lancet*, May 14th, 1904, page 1375.)

Powers of Education Committees.

It is obviously of the greatest importance in the effort to stay the spread of infectious disease that the authorities should have the earliest possible information as to each case (especially of those which first occur), and that none should escape recognition.

As the *Lancet* has recently pointed out (June 16th, 1904, page 1666) "it is well that the public should appreciate this fact; that if they desire the maximum use to be made of notification and of Isolation Hospitals a more earnest effort than heretofore must be made to discover the unrecognized case." Dr. Arthur Newsholme has also drawn attention to the importance of the "unrecognized case" in a lecture recently delivered at Victoria University, Manchester. "There is no doubt that the necessity for searching out suspicious or unnotified cases, which has so long been insisted upon in the memoranda of the Local Government Board, is not adequately acknowledged in the public health service generally." (*Lancet*, *ubi sup.*)

The Health Authorities, *i.e.*, Town Councils, etc., are spending large sums of money in isolation hospitals, and are desirous of the

earliest possible information as to cases which possibly may be infectious. One of the great difficulties of the Education Committees of the Town Councils is the introduction of infection into the Schools. If, when a parent says that a child is ill, they insist that he (or she) shall procure a medical certificate to excuse non-attendance at school, the result will be that, for fear of the School Attendance Officer, children will be sent when beginning to be ill and the School will become infected. If, on the other hand, the parents' statements are accepted too readily the attendance at School will seriously diminish. It will be the aim of Education Committees throughout the country to solve the difficulty; and here the reports of the Medical Officers of Health will be of great value as showing what may be found to be the best solution.

It will be noticed that there are various officials whose duty it is, on various occasions, and for various purposes, to visit people in their own homes. There is the doctor to perform vaccination, the Vaccination Officer; the Sanitary Inspector; the School Attendance Officer; and for the poorest class, the Relieving Officer. Also Education Committees employ a doctor for some purposes. It may well be hoped that with all these at work some plans may be devised by which infectious disease (whether notifiable or not) may be much diminished.

The Boards of Guardians.

So far I have chiefly spoken of those remedies which are within the power of the Town and other "Urban District" Councils; these Councils are the Sanitary authorities. There are, however, other bodies whose administration has (I believe) a far larger effect on the health of the towns, and especially on Infant Mortality and Infectious Diseases, than has been generally supposed—I mean the "Guardians of the Poor." They are the authorities for securing Vaccination. It is also their duty to give whatever relief is necessary for the sick poor (43 Eliz. c. 2, s. 1).* It is the duty of the Guardians and of the Relieving Officer to give this relief, including an order for the doctor if necessary; and the Relieving Officer is not only responsible to the Local Government Board if he neglects his duty, but he is liable in the case of death or illness, resulting from his neglect, to criminal proceedings. See Reg. *v.* Curtis (1885), 15 Cox C.C. 746; Macmorran's Poor Law General Orders, p. 240.*

* The phrase used in the Statute is "Necessarie releife of the lame impotent olde blinde and such other amonge them being poore and not able to work." This part of the Elizabethan Statute is still in force. See Revised Statutes, and Attorney General *v.* Guardians of the Poor of Merthyr Tydfil Union, L.R. [1900] 1 Ch. 516, Court of Appeal.

Moreover, by a recent statute, it is the duty of the parent or person in charge of the child to apply for Poor Law Relief if unable to maintain it. See 57 & 58 Vict. c. 41, sects. 1 (1), 23 (2) (3).*

Also receipt of Medical Relief does not (like ordinary Relief) involve the loss of either Parliamentary or Municipal vote.† The law therefore has made ample provision that the children of poor people who cannot afford a doctor may have proper medical attention. Where then is the difficulty?

It partly arises from the ignorance and carelessness of parents as to the importance of calling in the doctor for infants who are ill from digestive troubles, and from measles and whooping cough or are in the early stages of scarlet fever, etc., etc.

These deficiencies we may hope to remove, to some extent, by educational efforts such as those indicated above, and by endeavours to raise the present feeble sense of the sacredness and value of human life.

There is, however, another and, I believe, a very serious cause which I suggest requires investigation and would well repay research, I mean the policy of some Boards of Guardians in connection with "Medical relief."

Medical relief is a branch of Out-relief, and consequently those Boards who agree with Sir William Chance in thinking Out-relief an evil thing try to cut it down as far as possible. This is probably not often effected by absolute refusal; but rather by a system of *deterring* applicants.

It should be remembered that if Guardians, instead of giving medical relief, offer the workhouse to a whole family in the case of an infant suffering from indigestion, diarrhœa, or measles, such an offer would be usually absolutely futile,—except for the purpose of freeing the Relieving Officer from liability to the charge of manslaughter, and the Guardians from public blame in the case of the infant's death and subsequent exposure of the facts.

* By "Medical Relief" I mean Medical Out-relief, not relief in a Workhouse Infirmary.

† "The term 'medical or surgical assistance' in this Act shall include all medical and surgical attendance, and all matters and things supplied by or on the recommendation of the medical officer having authority to give such attendance and recommendation at the expense of any Poor Rate."—Medical Relief Disqualification Removal Act 1885 (48 and 49 Vict. c. 46), sect. 4.

Receipt of medical assistance, and of medicine (sect. 2) does not disqualify for the above franchises. See also Honeybone *v.* Hambridge (1886), 18 Q.B.D. 418.

Of course the Guardians might offer the workhouse to the sick infant* alone, leaving the parents outside. It is submitted that enquiry would show that this would in most cases of infantile disease be either impracticable, or at least very undesirable; and that few (if any) Unions adopt this course to any large extent. It is therefore clear that as to the vast majority of sick infants either the Guardians give medical out-relief or none at all.

I will mention two methods which have been recently advocated at the Poor Law Conference in Oxford with the avowed object of diminishing medical relief, and which are employed in some Unions.

One is that all relief should be given on loan to the responsible parent in the first instance, the Guardians afterwards considering the case, and cancelling the loan if they think fit.†

The other is that the parent of the child should be compelled to appear before the Board or a Committee.

Both methods are very successful in reducing medical relief.

The ratepayers apparently save a trifle; but the real question for research is, What is the effect on the sick and especially on the Infants? Does this system increase disease and death? Does it assist in the spread of infectious disease?

I would ask for careful research as to whether the high infantile mortality and general death-rate which prevail in so many of our large cities is not in some of them *partly* caused by the system of Poor Law administration. In the face of the authorities quoted above it is quite unsafe to suppose that the high infantile mortality is mainly due to over-crowding.

Unions where practically no ordinary out-door and very little medical relief is given, or where there is a determined effort on the part of the Guardians to diminish medical relief, are frequently quoted to Guardians of other Unions, by a certain school of Poor Law Reformers, as models for imitation.

The questions above mentioned are therefore deserving of investigation for the sake of the whole country.

Moreover it seems worthy of investigation whether anything which prevents or tends to prevent the poorest class from applying to the Doctor in the *beginning* of illness must not increase or tend to increase

* An infant who "ceases to thrive" must be reckoned as sick.

† Sometimes the Relieving Officer has a per centage on the amount collected. In one Union he is allowed 20 per cent.

infectious disease; and whether this consideration must not apply to small pox, diphtheria, and scarlet fever, as well as to those diseases which for the most part affect children only.

May I suggest an investigation of the matter so far as relates to relief to infants, and to sufferers from such infectious diseases as are not in practice removable to Isolation Hospitals?

The County Councils.

These bodies have large powers (often but little exercised) with regard to sanitation. The Reports of the Cornwall County Council may be instanced as showing what good work can be done by a County Council. A collection of the Reports of those County Councils which print any would be very useful. Next to the health of the City of Oxford that of the County must affect the University; and research into the action of other County Councils might stimulate the Oxfordshire County Council.

II.—EXPERIMENT.

The University of Oxford has enormous powers with reference to the health of Oxford. It possesses direct representation on the City Council. Its representatives on the City Council take part in appointing the Education Committee, and some of its representatives on the Council are also on that Committee. Moreover the Hebdomadal Council "nominates" two representatives on the Education Committee. Convocation, certain of the Colleges, and Christ Church elect ten representatives upon the Oxford Board of Guardians, the Vice-Chancellor being also Guardian *ex officio*. The Hebdomadal Council appoints two of the Trustees of the Municipal Charities; and in a variety of other ways the University has a large share in governing the City, and ample powers which may be exercised for the health of both University and City.

Oxford.

In approaching the question of infant mortality in Oxford we find that while in the two Parishes of St. Clement and St. Ebbe in 1902 the death-rate was very high, in 1903 it was very low. On the other hand the death-rate in St. Thomas is considerably higher in 1903 than in 1902. In Oxford, as a whole, it was considerably reduced.

The figures taken from Dr. Ormerod's reports are as follows :—

Infants under one year. Rate of deaths per 1000 births.

Year.	1902	1903
St. Clement	198	72
St. Ebbe	193	99
St. Thomas	118	133
Oxford	129	95
England and Wales	133	132
The 76 towns	145	144
The 103 towns	135	135

Oxford is reckoned among the 103 towns.

In the Report for 1903* there is a Table of the Causes of Infant Mortality, classified under six headings, for nearly thirty years. Its figures for the two last years are as follows :—

Year	Infectious Diseases†	Respiratory Diseases	Premature Birth	Atrophy	Diarrhœa	Other Diseases	Total
1902	13	24	30	32	20	11	130
1903	8	9	30	21	19	8	95

Dr. Ormerod remarks that we shall not be far wrong if we say that a large proportion of the deaths classified under the heads of "Atrophy" and "Diarrhœa" are due to unsuitable feeding; and that much of the life lost from premature birth might have been saved if the care of the child had been begun long before its birth (Report, p. 8). His opinion therefore is that "a large proportion" of not far short of half the deaths proceeded from unsuitable feeding. The number of deaths under the heading "premature birth" is startling, but it appears to include those which occur from "congenital defects" (see Report, p. 6). However, it does not include the still-born. It is evident, therefore, that many lives would be saved if women of the poorer classes had the opportunity of

* Presented to the City Council on May 4, 1904.

† Including Tuberculosis.

taking competent advice before their confinement and proper attendance during the confinement. How this should be managed is (I submit) a subject which deserves consideration.

Measles. In 1903 there were only a few cases and no deaths. Roughly speaking, the disease tends to recur epidemically in large communities at periods of from 2 to 4 years (Report 1903, p. 17). There was an outbreak in 1902, and twenty died. It recurs in Oxford about every three years (see Report 1902, pp. 10, 11), so that it is necessary that we should be on our guard against this disease.

It is unnecessary for me to go into further details as regards Oxford. We have the great advantages of a most able and indefatigable medical Officer of Health, and a City Council anxious for the sanitation and welfare of the city. There is no reason why Oxford should not become a model for other cities.

In the course of this letter on the deaths of children I have been led to discuss incidentally the prevention of infectious disease, in its more general aspects. This latter question has however the deepest practical interest for both University and City, so that the digression may perhaps be excused.

The facts here brought forward. and the authorities cited, will clearly show the necessity for a thorough investigation into the causes and remedies for high infantile mortality, and I venture to think that the University will be conferring a great benefit on the country in general and on this City of Oxford if it will (through its Professoriate and Teachers, or through some of its individual members) take up this branch of Biological and Economic Science.

I am, dear Mr. Vice-Chancellor,

Sincerely yours,

J. Theodore Dodd.

55, St. Giles', Oxford.
June, 1904.

NOTE A.

The Diminishing Birth-rate.

The following extracts are taken from the Presidential Address "On the Diminishing Birth-rate, delivered before the British Gynæcological Society, Feb. 11, 1904, by John W. Taylor, M.Sc., F.R.C.S., Professor of Gynæcology, Birmingham University, Surgeon to the Birmingham and Midland Hospital for Women."

". . . a diminishing birth-rate is not a feature of our own kingdom only, but is to some extent European in its scope or effect, and the lowest birth-rate is that of France.

"Of the other great powers and nations—the United States, Russia, China, and Japan—no certain statistics are available, but we have very good reason to believe that the birth-rate is seriously falling in the States, but notably rising in Russia and Japan. According to Russian statistics from 1892 to 1894, the birth-rate per 1,000 was 47.7, and from 1894 to 1897 the birth-rate per 1,000 was 49.5, so that there has been not only no loss or diminution in the birth-rate here, but the figures are also far above those already tabulated. So far, the data we have considered show us that the birth-rate throughout the whole of the West is diminishing, while that of the East is rather expanding. . . . . .

". . . . . while Norway, Denmark and Austria very nearly keep up their birth-force of twenty years ago, the other nations in their order show an increasing loss, and England and Wales stand at the very bottom of the list. None of the other nations have sustained so great a loss as we have in this definite period of time." . . .

"But as civilization increases, there can be little doubt that the susceptibility to pain increases also, and it may be that the mothers of to-day need a greater consideration and help, during the progress of pregnancy and lactation, than the mothers of former years."

Mr. Taylor states there has been a steady decrease in the birth-rate from 34 per thousand persons living in Great Britain and Ireland in 1874-78 to 29 per thousand living in 1894-8. It is at present higher than that of France, but is diminishing more rapidly in England and Wales than in any other nation. These extracts are simply given as forming an additional argument that we should not, in the supposed interests of an old-fashioned political economy, permit children to die.